

SERVICE MANUAL BFVSM-95



TRI-CLOVER®

BUTTERFLY VALVE

SERIES A51L • A52 • A53



Tri-Clover Inc.

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SAFETY

Safety is very important!



Included throughout this manual is the safety alert symbol you see to the left. When you see this symbol be alert to the potential for personal injury.

SIGNAL WORDS: Like DANGER, WARNING, or CAUTION are used with a safety alert symbol. DANGER-Immediate hazard which WILL result in severe personal injury or death. WARNING-Hazards or unsafe practices which COULD result in personal injury or death. CAUTION-Hazards or unsafe practices which COULD result in minor personal injury or product damage.

DO NOT attempt to modify any Tri-Clover product. To do so could create unsafe conditions and void all warranties. **DO NOT place any Tri-Clover product in an application where general product service ratings are exceeded.**

INTRODUCTION

Thank you for purchasing a Tri-Clover Product!

This manual contains disassembly and assembly instructions, maintenance procedures, and complete parts list for all Series A51L, A52 and A53 Butterfly Valves designed and manufactured by Tri-Clover Inc., Kenosha, Wisconsin.

READ THIS MANUAL carefully to learn how to service these valves. Failure to do so could result in personal injury or equipment damage.

INSTALLATION

Pre-Installation Checks

For convenience in packaging and storage, the valve is shipped completely assembled. When installing the valve, it is necessary to partially disassemble the valve and reassemble it in place.

Verify installation dimensions: Table 1 lists the dimensions required for assembly of Series A Tri-Flo® Butterfly Valves to a piping run. Dimension A in Figure 1 is the distance required between fixed Tri-Clamp® connectors. Refer to Table 2 for the dimensions required for specific adapters other than Tri-Clamp.

Check pipe-end alignments: If the valve is to be installed between fixed Tri-Clamp ends, the faces of the Tri-Clamp ends must be parallel in all planes and on the same centerline.

IMPORTANT: Failure to have fixed pipe-end openings both parallel and in alignment will prevent proper sealing of the Tri-Clamp ends to the valve seat gasket. An improperly sealed valve may leak.

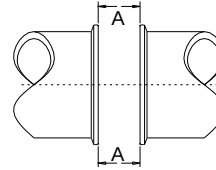


Figure 1

Compressed Seat Width for All Connectors	
Valve Size	Tube O.D.
1 ^{1/2}	³ / ₈
2	¹⁷ / ₃₂
2 ^{1/2}	¹¹ / ₁₆
3	¹³ / ₁₆
4	¹⁷ / ₆₄

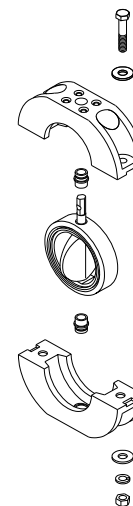
Table 1

Dimension - Overall Length With Two Connectors Of Same Type								
Valve Size	Tri-Clamp®	Flanged A51	Flanged A52 & A53	Female (NPT)	Male (NPT)	Butt Weld	Bevel Seat Hex Nut ACME	Bevel Seat ACME End
1 ^{1/2}	2 ⁵ / ₈	12	5 ¹ / ₂	4 ⁵ / ₈	4 ⁷ / ₈	6 ³ / ₈	6 ³ / ₈	3 ¹³ / ₁₆
2	3 ²⁵ / ₃₂	13 ⁵ / ₈	5 ³ / ₄	4 ¹⁹ / ₃₂	5 ⁵ / ₃₂	6 ¹⁷ / ₃₂	6 ¹⁷ / ₃₂	3 ³¹ / ₃₂
2 ^{1/2}	3 ¹⁵ / ₁₆	13 ³ / ₄	6	5 ⁹ / ₁₆	6 ⁵ / ₁₆	6 ¹¹ / ₁₆	7 ¹¹ / ₁₆	4 ³ / ₈
3	4 ¹ / ₁₆	14	6 ³ / ₈	6 ³ / ₁₆	6 ¹³ / ₁₆	8 ¹³ / ₁₆	8 ⁵ / ₁₆	4 ⁵ / ₈
4	4 ³⁹ / ₆₄	16 ¹ / ₄	6 ³ / ₈	6 ⁵⁵ / ₆₄	7 ³¹ / ₆₄	9 ⁷ / ₆₄	9 ⁷ / ₆₄	5 ⁵¹ / ₆₄

Table 2

Installation Procedure

1. Remove the valve and operator from the shipping package. Inspect for damage incurred during shipping or storage. Do not attempt to install a damaged valve.
2. Refer to illustration at right. Using box or socket wrenches of the correct size, unfasten and remove the hex nuts, screws, and washers, which fasten the body halves together.
3. Remove the bronze bushings from the seat gasket and butterfly disc assembly. Inspect each bushing and note that one end is smooth, the other is grooved. Install the grooved end of each bushing into the body halves.
4. Lubricate the cavities of the body halves and the faces and outer rim of the seat gasket with Tri-Clover Silicone Spray No. L-1011B.
5. Place the butterfly disc in the open position. Position the seat gasket and butterfly disc assembly between Tri-Clamp® connectors or Tri-Clamp pipe-end adapters, place the body halves (with bushings installed) over the Tri-Clamp flanges, and press together as far as possible.
NOTE: Make sure the bushings are properly located in the body halves. Make sure the butterfly stem and actuator shaft are properly inserted in the coupling before proceeding to the next step.
6. Secure the body halves with the screws, washers, lockwasher and nuts. Tighten the nuts alternately and evenly until the body halves meet. Using box or socket wrenches of the correct size, tighten the nuts to 30 ft.-lb.
7. Test the operation of the valve. Be sure that the butterfly disc shuts off completely when it is moved to the closed position. When it is completely shut, both edges of the disc are in the same position on the gasket, so that the same amount of gasket is showing on both sides of the disc.



REMOVAL AND DISASSEMBLY

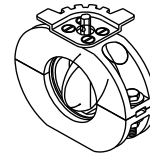
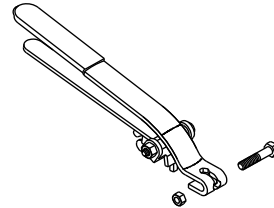


WARNING: To prevent personal injury, relieve pipe line pressure and drain all fluids completely



WARNING: To prevent personal injury, disconnect all electrical and pneumatic power to an operator. The operators actuate with sufficient force to cause serious injury.

1. Open the valve to flush and drain the line in which the valve is located. Close the valve.
2. Refer to illustration at right. Remove handle clamp bolt and hex nut from the valve stem and handle. Remove the handle from the stem.
NOTE: It is not necessary to remove a pneumatic or electric operator to disassemble a valve.
3. Using box or socket wrenches of the correct size, release and remove the hex nuts, screws, lockwashers and washers which clamp the body halves together.
4. Insert the blade of a screwdriver in the end slot between the body halves, separate the body halves and release the valve from the Tri-Clamp connectors of pipe-end adapters.
5. Remove the seat gasket and butterfly disc assembly.
6. Rotate the butterfly disc to the open position. Squeeze the seat gasket into an ellipse and remove the bushings.
7. Refer to illustration below. Squeeze the seat gasket into an ellipse, raise the butterfly disc and release the lower stem end. The butterfly disc may then be removed.
8. Inspect all parts for wear or damage. Replace the seat gasket if cracked, worn or deformed. Replace stem bushings if cracked or worn. Replace butterfly disc if cracked or worn. Replace screw or nuts if they have stripped or damaged threads.

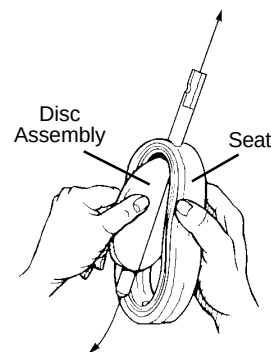


REASSEMBLY AND REINSTALLATION



WARNING: To prevent personal injury, keep hands and tools away from butterfly disc when actuating an electric or pneumatic operator. The operators actuate with sufficient force to cause serious injury.

1. Refer to illustration at right. Squeeze the sides of the seat gasket until it forms an ellipse. Insert the stem of the butterfly disc with the hex end into the upper hole in the gasket. Locate the lower end of the stem in the gasket hole. Reshape the gasket and test the action of the butterfly disc. The disc should turn freely.
2. Install the bushings in the body halves with the grooved end of each bushing into each body half.
3. Lubricate the cavities of the body halves and the faces and outer rim of the gasket with Tri-Clover Silicone Spray No. L-1011B.
4. Place the butterfly disc in the open position. Position the seat gasket and butterfly disc assembly between Tri-Clamp® connectors or Tri-Clamp pipe-end adapters, place the body halves (with bushings installed) over the Tri-Clamp flanges, and press together as far as possible by hand.
NOTE: A normally closed electric or pneumatic operator will have to be opened to put the body halves together.
NOTE: Make sure the bushings are properly located in the body halves.
5. Fasten the body halves together with the screws, washers, lockwashers and nuts. Tighten the nuts alternately and evenly until the body halves meet. Using box or socket wrenches of the correct size, tighten the nuts to 30 ft-lb.
6. For the Series A51L-Manual Operator, depress the handle trigger and position the handle on the butterfly stem. The handle should fit well down over the stem but must clear the top plate. Secure the handle in place by tightening the clamp screw and the hex nut with wrenches of the correct size.

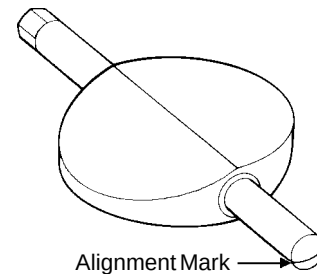


7. Test the operation of the valve. Be sure that the butterfly disc shuts off completely when it is moved to the closed position. When it is completely shut, both edges of the disc are in the same position on the gasket, so that the same amount of gasket is showing on both sides of the disc. If it does not shut completely, adjust the travel of the operator by following the adjustment procedure for either the electric or pneumatic.

OPERATORS (Manual, Pneumatic, Electric)

Alignment Mark

Each valve should have an alignment mark at the bottom end of the stem, as shown in illustration at right. This mark is in line with the butterfly disc. It allows checking the disc position when the valve is installed in the line. When an older valve without a mark is disassembled for service, mark it before reassembly. Clamp the disc securely and carefully make a permanent alignment mark on the bottom end of the stem. The mark must be exactly in line with the disc. Be extremely CAREFUL to mark the stem correctly.



Manual

Handles and Stop Plates

One of three different handles are used on Tri-Flo Butterfly Vales, depending on size. Note that a locking handle is now furnished as standard on every size valve. The locking handle permits "position locking" of the valve disc in OFF, ON or any intermediate position. This standard handle cannot prevent intentional valve position tampering.

Pneumatic

Installation

80 psig air supply required. The following Solenoid valves are available. Connect air supply to solenoid valve as illustrated in the schematics to the right.

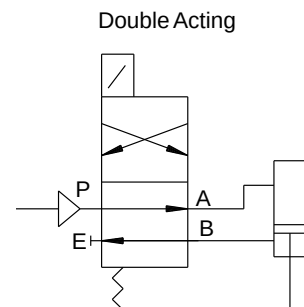
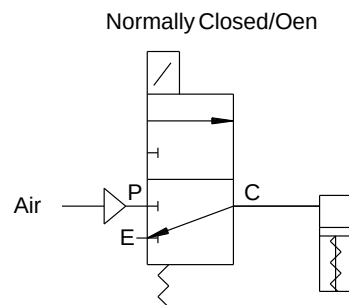
Solenoid Selection Chart		
4/7 110 VAC	4/7 220VAC	NEMA RATING VOLTAGE (60 HZ. STD.)
33-205-110	33-205-220	3 Way
33-204-110	33-204-220	3 Way - with Flow control
33-183-110	33-183-220	4 Way
33-181-110	33-181-220	4 Way - with Flow control

NOTE: Disassembly of the pneumatic actuator is not recommended. Contact Tri-Clover for service center location and repair instructions.

Adjustment

The limits of rotation are changed by setting the adjusting screws in the cylinder ends. The closing limit is regulated by the adjusting screw on the right hand side (short end of cylinder). The opening limit is regulated by the adjusting screw on the left hand side (long end of cylinder). An adjustable wrench is suitable for the lock nuts and screws.

Loosen the lock nuts on the adjusting screws. Apply air pressure to the OPEN port to open the valve. If the butterfly disc does not open all the way or rotates too far, turn the OPEN adjusting screw in or out to adjust the limit of opening rotation. On air-to-spring actuators, release the air pressure to close the valve. On air-to-air actuators, apply the air pressure to the CLOSE port to close the valve. If the valve does not close completely or rotates too far, turn the CLOSE



adjusting screw in or out to adjust the closing limit of rotation.

NOTE: Before turning an adjusting screw, operate the actuator in the opposite direction. This will remove pressure from the adjusting screw so it can be easily turned.

After each adjustment, operate the actuator several times in each direction and recheck the adjustment. When the adjustments are satisfactory, tighten the lock nuts.

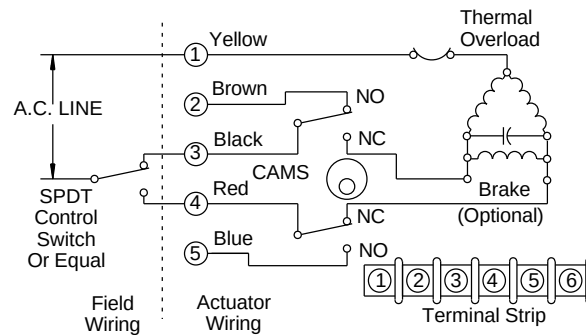
Electric

Installation

A standard wiring diagram is shown to the right. Disassembly of the Electric Actuator is not recommended. Contact Tri-Clover for service center location and repair instructions.

Adjustment

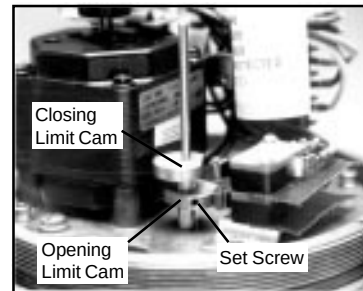
Remove the cover. The limits of rotation are adjusted by the cams which actuate the micro switches. The upper cam controls the closing limit. The lower cam (closest to valve) controls the opening limit. Refer to picture below.



To adjust a cam, loosen the set screw in the cam to free it from the shaft, move the cam in the desired direction, and retighten the set screw. The set screws in all actuators require $\frac{1}{16}$ inch Allen wrench. **IMPORTANT:** To avoid stripping threads, tighten set screws firmly, but not excessively.

Connect all wires to the appropriate terminals to open the valve. If the butterfly disc does not open completely or rotates too far, disconnect the wires and adjust the OPEN limit cam.

Connect all wires to the appropriate terminals to close the valve. If the butterfly disc does not close completely or rotates too far, disconnect the wires and adjust the CLOSE limit cam.



After each adjustment, operate the actuator several times in each direction and recheck the adjustment. When the adjustments are satisfactory, install the cover.

IMPORTANT: When installing the cover, be sure the wires are placed where they will not be pinched between the cover and the internal parts.

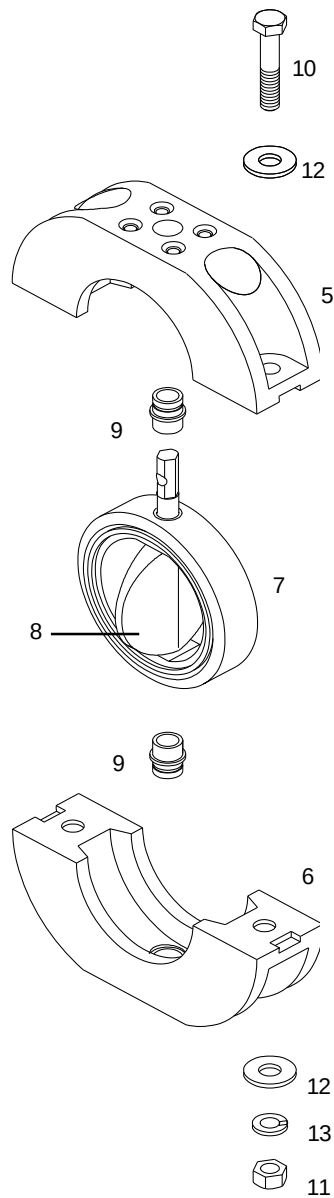
PARTS LIST

A51L / A52 / A53 Series Butterfly Valves

All orders for repair parts must contain the following data.

1. Complete model number
2. Complete description and part number.

The following exploded view and accompanying parts list facilitate order repair parts from the factory. All parts illustrated are indexed to the parts list by key numbers.



A51L / A52 / A53 Series Butterfly Valves

Key #	Description*	1½"		2"		2½"		3"		4"		No. Req'd.
		A51L-1½-X-A	A51RL-1½-X-A	A51L-2-X-A	A51RL-2-X-A	A51L-2½-X-A	A51RL-2½-X-A	A51L-3-X-A	A51RL-3-X-A	A51L-4-X-A	A51RL-4-X-A	
5	Upper Body-A51L	51-1½-01B-01-A	51-1½-01B-01-A	51-2-01B-01-A	51-2-01B-01-A	51-2½-01A-01-A	51-2½-01A-01-A	51-3-01A-01-A	51-3-01A-01-A	51-4-01B-01-A	51-4-01B-01-A	1
	Upper Body-A51RL	51R-1½-01B-01-A	51R-1½-01B-01-A	51R-2-01B-01-A	51R-2-01B-01-A	51R-2½-01A-01-A	51R-2½-01A-01-A	51R-3-01A-01-A	51R-3-01A-01-A	51R-4-01B-01-A	51R-4-01B-01-A	1
6	Upper Body - A52 / A53	52-1½-01B-01-A	52-1½-01B-01-A	52-2-01B-01-A	52-2-01B-01-A	52-2½-01A-01-A	52-2½-01A-01-A	52-3-01A-01-A	52-3-01A-01-A	51-4-01B-01-A	51-4-01B-01-A	1
	Lower Body-A51L	51-1½-01A-02-A	51-1½-01A-02-A	51-2-01A-02-A	51-2-01A-02-A	51-2½-01-02-A	51-2½-01-02-A	51-3-01-02-A	51-3-01-02-A	51-4-01-02-A	51-4-01-02-A	1
	Lower Body-A51RL	51R-1½-01A-02A	51R-1½-01A-02A	51R-2-01A-02-A	51R-2-01A-02-A	51R-2½-01-02-A	51R-2½-01-02-A	51R-3-01-02-A	51R-3-01-02-A	51R-4-01-02-A	51R-4-01-02-A	1
7	Seat**	51-1½-42A-X	51-1½-42A-X	51-2-42A-X	51-2-42A-X	51-2½-42-X	51-2½-42-X	51-3-42-X	51-3-42-X	51-4-42-X	51-4-42-X	1
8	Disc A51L / RL	51-1½-05D-316	51-1½-05D-316	51-2-05D-316	51-2-05D-316	51-2½-05D-316	51-2½-05D-316	51-3-05D-316	51-3-05D-316	51-4-05D-316	51-4-05D-316	1
	Disc A52 / A53	51-1½-05E-316	51-1½-05E-316	51-2-05E-316	51-2-05E-316	51-2½-05E-316	51-2½-05E-316	51-3-05E-316	51-3-05E-316	51-4-05E-316	51-4-05E-316	1
9	Bushing	51-1½-08A	51-1½-08A	51-2-08A	51-2-08A	51-2½-08	51-2½-08	51-3-08	51-3-08	51-4-08	51-4-08	2
10	Screw	SC1316H-SS	SC1316H-SS	SC1316H-SS	SC1316H-SS	SC1316H-SS	SC1316H-SS	SC1316H-SS	SC1316H-SS	SC1316H-SS	SC1316H-SS	2
11	Nut	NU1300H-E	NU1300H-E	NU1300H-E	NU1300H-E	NU1300H-E	NU1300H-E	NU1300-E	NU1300-E	NU1300H-E	NU1300H-E	2
12	Washer	WA1300-SS	WA1300-SS	WA1300-SS	WA1300-SS	WA1300-SS	WA1300-SS	WA1300-SS	WA1300-SS	WA1300-SS	WA1300-SS	4
13	Lockwasher	LWA1300-SS	LWA1300-SS	LWA1300-SS	LWA1300-SS	LWA1300-SS	LWA1300-SS	LWA1300-SS	LWA1300-SS	LWA1300-SS	LWA1300-SS	2

* A51L = Tube OD, locking handle (std.), or A51RL = Tube OD, recessless ferrule, locking handle.
** "X" as it appears on above charts designates choice of seat material (Item No. &). EDPM is provided as standard - "E" designates EDPM material
Contact Tri-Clover for availability of other seat materials. To avoid confusion when ordering replacement parts, please WRITE OUT choice of seat material.
Example: A51L-1½-2-E (EPDM)-A

Pneumatic A53 Series (See Following Pages for Drawing)

Key #	Description*	1½"		2"		2½"		3"		4"		No. Req'd.
		A53-P2400-1½-X-A	A53-P2400-1½-X-A	A53-P2400-2-X-A	A53-P2400-2-X-A	A53-P2900-2½-X-A	A53-P2900-2½-X-A	A53-P2600-3-X-A	A53-P2600-3-X-A	A53-P44100-4-X-A N.O.	A53-P2600-4-X-A N.C.	
1	Actuator					Refer to following page						
2	Coupler	52-1½-10D-S	52-1½-10D-S	52-2-10D-S	52-2-10D-S	52-2½-10D-S	52-2½-10D-S	52-3-10D-S	52-3-10D-S	52-4-10D-S	52-4-10D-S	1
3	Yoke - Upper Half	52-1½-47A-01-S	52-1½-47A-01-S	52-1½-47A-01-S	52-1½-47A-01-S	52-2½-47A-01-S	52-2½-47A-01-S	52-3-47A-S	52-3-47A-S	52-4-47A-S	52-4-47A-S	1
4	Yoke - Lower Half	52-1½-47A-02-S	52-1½-47A-02-S	52-1½-47A-02-S	52-1½-47A-02-S	52-2½-47A-02-S	52-2½-47A-02-S	None Required	None Required	None Required	None Required	1
5	Cap Screw	SC1106H-SS	SC1106H-SS	SC1106H-SS	SC1106H-SS	SC1107H-SS	SC1107H-SS	None Required	None Required	None Required	None Required	2
6	Lockwasher	LWA1100-SS	LWA1100-SS	LWA1100-SS	LWA1100-SS	LWA1100-SS	LWA1100-SS	LWA1100-SS (4 req.)	LWA1100-SS (4 req.)	LWA1100-SS (4 req.)	LWA1100-SS (4 req.)	6
7	Nut	NU1100H-SS	NU1100H-SS	NU1100H-SS	NU1100H-SS	None	None	None	None	None	None	2
8	Upper Body	52-1½-01B-01-A	52-1½-01B-01-A	52-2-01B-01-A	52-2-01B-01-A	52-2½-01A-01-A	52-2½-01A-01-A	52-3-01A-01-A	52-3-01A-01-A	51-4-01B-01-A	51-4-01B-01-A	1
9	Cap Screw	SC1106H-SS	SC1106H-SS	SC1106H-SS	SC1106H-SS	SC1107H-SS	SC1107H-SS	SC1106H-SS	SC1106H-SS	SC1107H-SS	SC1107H-SS	4
10	Cap Screw	SC906H-SS	SC906H-SS	SC906H-SS	SC906H-SS	SC906H-SS	SC906H-SS	SC1307FF-SS	SC1307FF-SS	SC1307FF-SS	SC1307FF-SS	4
11	Seat	51-1½-42-X	51-1½-42-X	51-2-42-X	51-2-42-X	51-2½-42-X	51-2½-42-X	51-3-42-X	51-3-42-X	51-4-42-X	51-4-42-X	1
12	Disc	51-1½-05E-316	51-1½-05E-316	51-2-05E-316	51-2-05E-316	51-2½-05E-316	51-2½-05E-316	51-3-05E-316	51-3-05E-316	51-4-05E-316	51-4-05E-316	1
13	Lower Body	51-1½-01A-02-A	51-1½-01A-02-A	51-2-01A-02-A	51-2-01A-02-A	51-2½-01-02-A	51-2½-01-02-A	51-3-01-02-A	51-3-01-02-A	51-4-01-02-A	51-4-01-02-A	1
14	Bushing	51-1½-08A	51-1½-08A	51-2-08A	51-2-08A	51-2½-08	51-2½-08	51-3-08	51-3-08	51-4-08	51-4-08	2
15	Cap Screw	SC1316H-SS	SC1316H-SS	SC1316H-SS	SC1316H-SS	SC1316H-SS	SC1316H-SS	SC1316H-SS	SC1316H-SS	SC1316H-SS	SC1316H-SS	2
16	Washer	WA1300-SS	WA1300-SS	WA1300-SS	WA1300-SS	WA1300-SS	WA1300-SS	WA1300-SS	WA1300-SS	WA1300-SS	WA1300-SS	4
17	Lockwasher	LWA1300-SS	LWA1300-SS	LWA1300-SS	LWA1300-SS	LWA1300-SS	LWA1300-SS	LWA1300-SS	LWA1300-SS	LWA1300-SS	LWA1300-SS	2
18	Nut	NU1300H-E	NU1300H-E	NU1300H-E	NU1300H-E	NU1300H-E	NU1300H-E	NU1300H-E	NU1300H-E	NU1300H-E	NU1300H-E	2
19	Lockwasher	LWA900-SS	LWA900-SS	LWA900-SS	LWA900-SS	LWA900-SS	LWA900-SS	LWA1300-SS	LWA1300-SS	LWA1300-SS	LWA1300-SS	4

* All Actuators can be used as normally open or normally closed except 4" which requires a heavier type actuator for normally open.

PARTS LIST

Manual A51L Series

All orders for repair parts must contain the following data:

1. Complete model number.
2. Complete description and part number.

Pneumatic Actuator and Electric Actuator

To order replacement parts for the Tri-Clover Butterfly with Pneumatic Actuator and Electric Actuator, include all the information asked for below:

Valve Replacement Parts

To order valve replacement parts, the valve part number must be included with your order. To obtain the part number of the valve you have, refer to the sample part number below and build the part number of your valve.

A53A - P2200 - 3 - E - A

1

2

3

4

5

1 Valve Series

2 Actuator

3 Valve Size

4 Seat Material

5 External Body Material

Actuator Replacement

There are no model or serial numbers on the actuator, therefore obtain the correct actuator part number from the table below knowing the valve size and for the Electric Actuators, the actuator voltage.

PNEUMATIC ACTUATOR

Valve Size	Actuator Part Number	
	<i>Air to Air</i>	<i>Air to Spring</i>
1½", 2"	A53A-P2000	53-P2400
2½"	A53A-P2100	53-P2500
3"	A53A-P2200	53-P2600
4"	A53A-P2200	53-P2600-NC*
		53-P44100-NO*

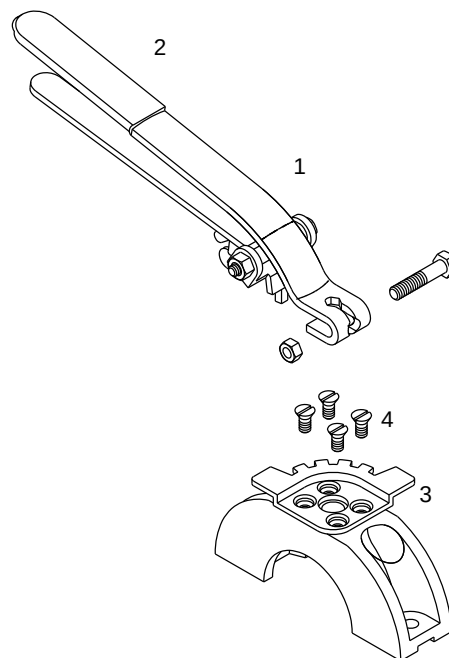
* All pneumatic actuators can be used normally open (NO) or normally closed (NC) except 4" size above.

ELECTRIC ACTUATOR

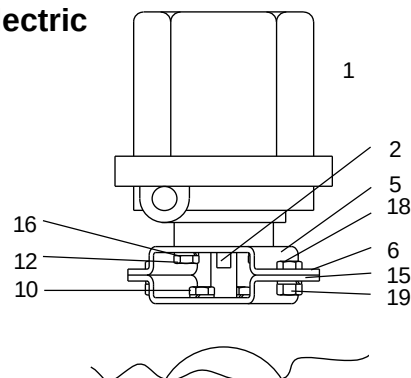
Valve Size	Actuator Voltage	Actuator Part Number	
		<i>Waterproof</i>	<i>Explosion Proof</i>
1½"	120	A52-E7000B	A52-E7000B
2"	220	A52-E7100B	A52-E7100B
2½", 3"	120	A52-E2800B	A52-E3000B
4"	220	A52-E2900B	A52-E3100B

Actuator for 1½ and 2" sizes varies in appearance from larger sizes-housing is semi-round, rather than rectangular.

Manual

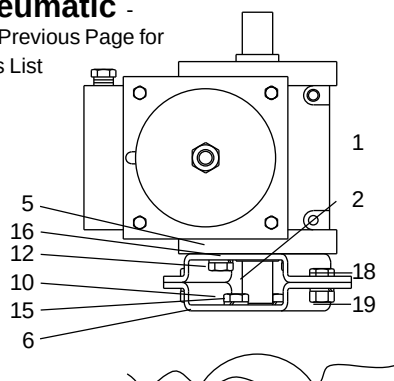


Electric



Pneumatic -

See Previous Page for Parts List



Manual A51L Series

Key #	Description*	A51L-1 1/2-X-A A51RL-1 1/2-X-A	A51L-2-X-A A51RL-2-X-A	A51L-2 1/2-X-A A51RL-2 1/2-X-A	A51L-3-X-A A51RL-3-X-A	A51L-4-X-A A51RL-4-X-A	No. Req'd.
1	Handle Assembly	51L-1 1/2-48G-S	51L-2-48G-S	51L-2-48G-S	51L-3-48G-S	51L-4-48G-S	1
2	Handle Sleeve	51-1 1/2-48G-06-35A	51-2-48G-06-35A	51-2-48G-06-35A	51-2-48G-06-35A	51-4-48G-06-35A	1
3	Stop Plate	51-1 1/2-86D-S	51-1 1/2-86D-S	51-1 1/2-86D-S	51-1 1/2-86D-S	51-4-86C-S	1
4	Screw	SC1005D-SS	SC1105D-SS	SC1105D-SS	SC1105D-SS	SC1105D-SS	4

* A51L = Tube OD, locking handle (std.),
or A51RL = Tube OD, recessless, locking handle.

Electric A52 Series

Key #	Description*	A52-E7XXXB-1 1/2-X-A	A52-E7XXXB-2-X-A	A52-E7XXXB-2 1/2-X-A	A52-E7XXXB-3-X-A	A52-E7XXXB-4-X-A	No. Req'd.
1	Actuator	52-1 1/2-10D-S	52-2-10D-S	52-2 1/2-10D-S	52-3-10D-S	52-4-10D-S	1
2	Coupler	52-1 1/2-47A-01-S	52-1 1/2-47A-01-S	52-2 1/2-47A-01-S	52-3-47A-S	52-3-47A-S	1
3	Yoke - Upper Half	52-1 1/2-47A-02-S	52-1 1/2-47A-02-S	52-1 1/2-47A-02-S	None	None	1
4	Yoke - Lower Half	SC1106H-SS	SC1106H-SS	SC1107H-SS	None	None	2
5	Cap Screw	LWA1100-SS	LWA1100-SS	LWA1100-SS	LWA1100-SS (4 req.)	LWA1100-SS (4 req.)	6
6	Lockwasher	NU1100H-SS	NU1100H-SS	None	None	None	2
7	Nut	52-1 1/2-01B-01-A	52-2-01B-01-A	52-2 1/2-01A-01-A	52-3-01A-01-A	51-4-01B-01-A	1
8	Upper Body	SC1106H-SS	SC1106H-SS	SC1107H-SS	SC1106H-SS	SC1107H-SS	4
9	Cap Screw	SC907H-SS	SC907H-SS	SC907H-SS	SC1307FF-SS	SC1307FF-SS	4
10	Cap Screw	51-1 1/2-42A-X	51-2-42A-X	51-2 1/2-42-X	51-3-42-X	51-4-42-X	1
11	Seat	51-1 1/2-05E-316	51-2-05E-316	51-2 1/2-05E-316	51-3-05-316	51-4-05E-316	1
12	Disc	51-1 1/2-01A-02-A	51-2-01A-02-A	51-2 1/2-01-02-A	51-3-01-02-A	51-4-01-02-A	1
13	Lower Body	51-1 1/2-08A	51-2-08A	51-2 1/2-08	51-3-08	51-4-08	2
14	Bushing	SC1316H-SS	SC1316H-SS	SC1316H-SS	SC1316H-SS	SC1316H-SS	2
15	Cap Screw	WA1300-SS	WA1300-SS	WA1300-SS	WA1300-SS	WA1300-SS	4
16	Washer	LWA1300-SS	LWA1300-SS	LWA1300-SS	LWA1300-SS	LWA1300-SS	2
17	Lockwasher	NU1300H-E	NU1300H-E	NU1300H-E	NU1300H-E	NU1300H-E	2
18	Nut	LWA900-SS	LWA900-SS	LWA900-SS	LWA1300-SS	LWA1300-SS	2
19	Lockwasher						4

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